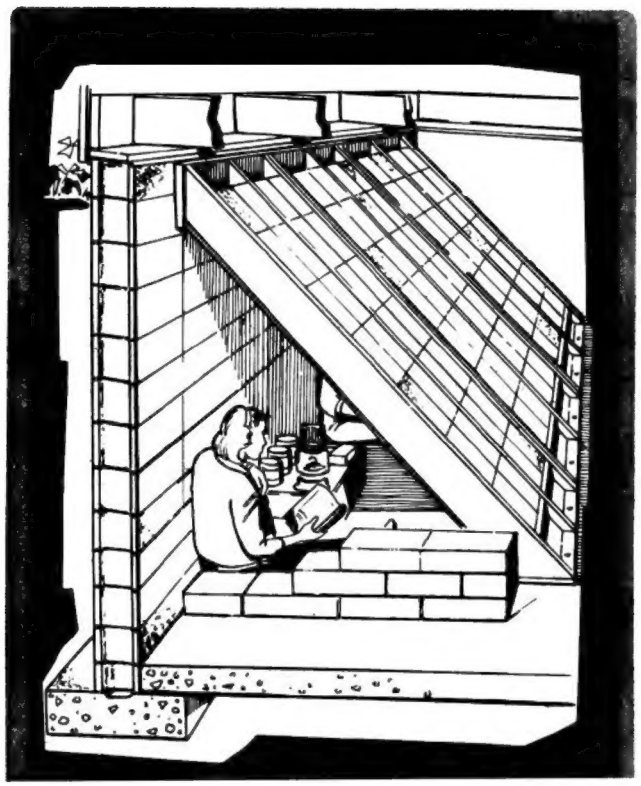
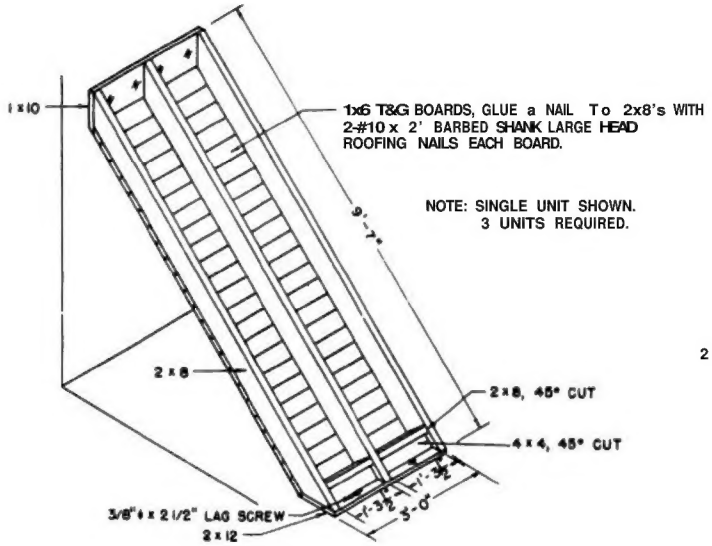
H-I 2-F
April 1980



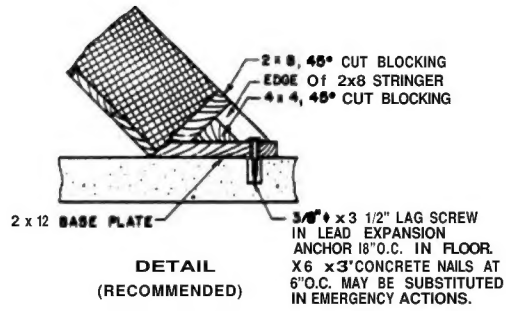
Pre-built wood components
stored
in the basement
may be
assembled
and filled
with bricks
or concrete blocks
for emergency protection.

HOME FALLOUT SHELTER
lean-to shelter-basement location plan f

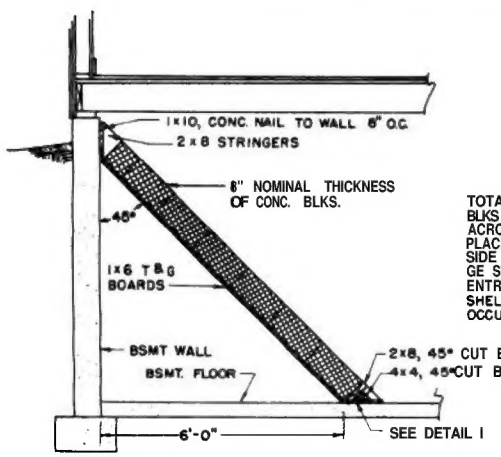
FEDERAL EMERGENCY
MANAGEMENT AGENCY


1x10
1x6 T&G BOARDS, GLUE a NAIL To 2x8's WITH 2-#10 x 2' BARBED SHANK LARGE HEAD ROOFING NAILS EACH BOARD.
NOTE: SINGLE UNIT SHOWN. 3 UNITS REQUIRED.
9'-7"
2 x 8
2x8, 45° CUT
4 x 4, 45° CUT
1'-3½"
1'-3½"
3'-0"
3/8"ϕ x 2 1/2" LAG SCREW
2 x 12

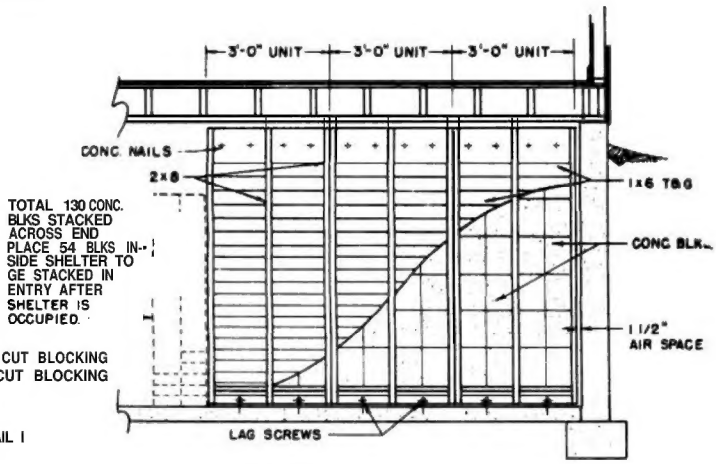
ISOMETRIC OF LEAN-TO UNIT


2 x 8, 45° CUT BLOCKING
EDGE Of 2x8 STRINGER
4 x 4, 45° CUT BLOCKING
2 x 12 BASE PLATE
3/8"ϕ x 3 1/2" LAG SCREW IN LEAD EXPANSION ANCHOR 18"O.C. IN FLOOR. X6 x3"CONCRETE NAILS AT 6"O.C. MAY BE SUBSTITUTED IN EMERGENCY ACTIONS.

DETAIL
(RECOMMENDED)

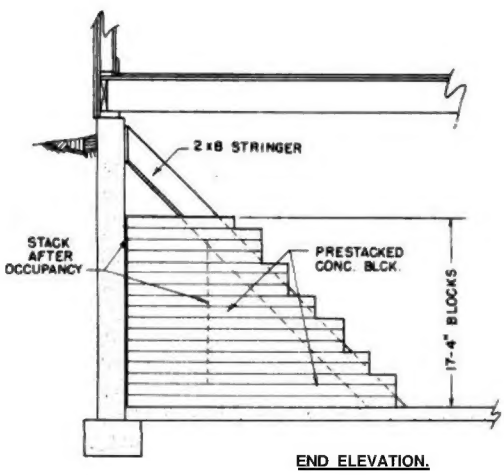


SECTION A

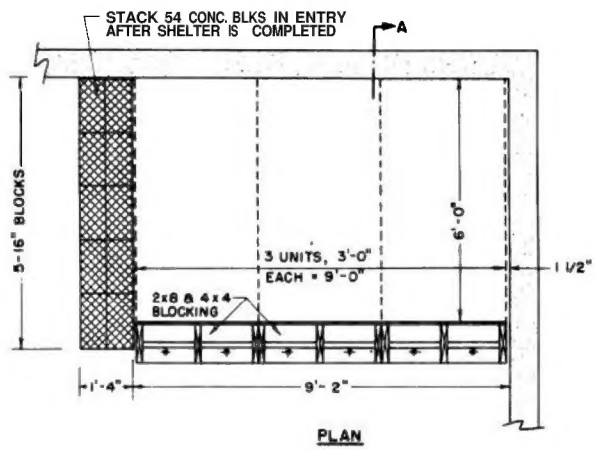


TOTAL 130 CONC. BLKS STACKED ACROSS END PLACE 54 BLKS IN-SIDE SHELTER TO GE STACKED IN ENTRY AFTER SHELTER IS OCCUPIED.

FRONT ELEVATION



END ELEVATION.



PLAN

GENERAL INFORMATION

This shelter is designed to provide protection from the effects of radioactive fallout in the below grade basement of an existing house. Its advantages are low cost, simplicity of construction, general availability of materials, and the fact that it may be easily disassembled.

TECHNICAL SUMMARY

This shelter design will provide 54 square feet of area and approximately 216 cubic feet of space. It will house three persons. The shelter length can be increased by increments of 3 foot panels. The height may be increased by the use of more materials. This increase will be limited by basement height and handling of the panels.

The materials necessary to construct this shelter should be available from retail lumber yards.

Natural ventilation is obtained by omitting 3 blocks from the top of the entranceway closure and by leaving a 1-1/2 in. gap between the end of the shelter and the basement wall.

Construction time should not exceed 20 man-hours when all the materials are on hand at the shelter location. It is desirable to preassemble the lean-to units and store them in a corner. They can then be installed in the best corner of the basement and stacked with blocks in 1 hour.

MATERIALS LIST

Item	Actual Number Required
Masonry :	
4" x 8" x 16" solid concrete masonry units or	290 blocks or
2-1/4" x 4" x 8" solid bricks	1740 bricks
Lumber: ("construction" or "No. 1" grades or better)	
stringers 2 x 8 x 9'-7" (45" diag. cut at both ends)	9 pieces
boards 1 x 6 x 3'-0" T & G (square edge may be used)	69 pieces
1 x 10 x 3'-0"	1 piece
2 x 10 x 3'-0"	1 piece
blocking 2 x 8 x 1'-3-1/2 stress-grade lumber	6 pieces
4 x 4 x 1'-3-1/2"	3 pieces*

*Rip lengthwise at 45" to provide the 6 pieces required

Hardware:

3/8" diam. x 2-l/4" lag screws and washers	12
3/8" bolt size lead expansion shield, 9/16" x 2" hole	12
#lO ga. x 2" barbed shank, large head roofing nails	3 pounds
16D common nails	1 pound
glue, protein emulsion (must develop 450 lbs. /sq. in.)	l-1/2 pints
#5 x 3" concrete nails	36

Special tools :

9/16" star drill to install anchor bolts into concrete basement floor and walls

CONSTRUCTION SEQUENCE

1. Prepare shelter units.
   a. Cut 45° bevels on 2 x 8 stringers. Arrange in 3 foot panels. Using 16d common nails, attach bottom boards and blocking on the beveled ends first,
   b. Fit in, glue and nail remaining bottom boards with large head roofing nails.
   c. Units can be stored assembled, if desired, to save time. It is desirable to locate lag screw holes and install lead shields in floor and basement wall.

2. Assemble shelter (emergency actions)
   a. Turn this panel right side up and place it in its permanent position. Fasten the panel to the floor with lag screws in lead shields leaving a l-1/2" gap between the end of the shelter and the basement wall. If lead shields have not been installed ahead of time, use concrete nails as shown in the detail.
   b. Fasten in sequence as many panels as are to be used. Nail to wall with concrete nails.
   c. Fill panels with 2 layers of solid concrete block or brick starting at bottom.
   d. Build end wall of 76 stacked blocks 456 bricks.
   e. Place 50 blocks or 300 bricks in the shelter for emergency closure of entranceway.